**IT Applications Unit 3, AOS 2, Organisations and Data Management**

**Structure and role of relational databases, p 101**

**Describe the following relationships in a relational database.**

1. **One-to-one relationship**

A one-to-one relationship indicates that one record in the first table is connected to only one record in a second table. For example, in relation to airplane seat allocation, one passenger can only have one seat and one seat can only have one passenger.

1. **One-to-many relationship**

A one-to-many relationship indicates that one record in the first table can be connected to more than one record in the second table. For example, in a workplace, several workers in an office may share the same telephone extension. Each extension record is related to several employees.

1. **Many-to-many relationship**

A many-to-many relationship is used when each record in the first table can be connected to a number of records in the second table. At the same time each record in the second table can be related to many records in the first table. For example, if you had a table of student details and a table of subjects, the students and subjects have a many-to-many relationship with each other and one subject can have many students and one student can have many subjects.

**Determining a RDBMS structure**

**Need to determine which field in each database will be the primary key**

1. **What are the roles of foreign keys?**

The role of the foreign key is to link the tables in a relational database.

1. **Read the document, primary keys/ foreign keys**
2. **Describe the characteristics of a foreign key.**

A foreign key is used to ensure that if you are entering data in one table, it already has a corresponding value in another.

1. **What is meant by referential integrity?**

A foreign key in the program Access is called referential integrity.

**Table normalisation**

1. **What is the role of table normalisation?**

Table normalisation is intended to give the database designer a tool to ensure that data integrity is maintained. The rules provide a systematic procedure to check for various problems in the database that would make it less efficient.

1. **There are six “normal forms”, each rule applied successively from the first normal form, (1NF).**
2. **Describe the nature of the following three “normal forms”.**
   1. **First normal form, (1NF)**

This rule states that at each field and record intersection there is only one value, not a list of values.

* 1. **Second normal form, (2NF)**

When you have more than one primary key in a table, you must make sure that each non-key field is fully dependant on the key.

* 1. **Third normal form, (3NF)**

Every field in a table must relate directly to the primary key.

1. **Read the article, normalisation for more explanation of this process.**